

# ABC of sexually transmitted infections

## Vaginal discharge—causes, diagnosis, and treatment

Helen Mitchell

Vaginal discharge is a common presenting symptom seen by doctors in many services (primary care, gynaecology, family planning, and departments of genitourinary medicine). Vaginal discharge may be physiological or pathological. Although abnormal vaginal discharge often prompts women to seek screening for sexually transmitted infections (STIs), vaginal discharge is poorly predictive of the presence of an STI. This article focuses on the causes and diagnosis of vaginal discharge and treatment of the most common infective causes.

### Aetiology

#### Physiological discharge

Normal vaginal flora (lactobacilli) colonise the vaginal epithelium and may have a role in defence against infection. They maintain the normal vaginal pH between 3.8 and 4.4. The quality and quantity of vaginal discharge may alter in the same woman in cycles and over time; each woman has her own sense of normality and what is acceptable or excessive for her.

#### Pathological vaginal discharge

Vulvovaginal candidiasis is a common infective cause of vaginal discharge that affects about 75% of women at some time during their reproductive life, with 40-50% having two or more episodes. Bacterial vaginosis is one of the most common diagnoses in women attending genitourinary medicine clinics. As 50% of cases of bacterial vaginosis are asymptomatic, the true prevalence of this condition in the community is uncertain. Bacterial vaginosis is associated with a new sexual partner and frequent change of sexual partners. A reduced rate of bacterial vaginosis is seen among women in monogamous sexual relationships, but it can occur in virginal women. Increased rates of bacterial vaginosis occur in certain groups of women, such as black African women, lesbians, and smokers.

Recurrence of bacterial vaginosis after treatment is common and can be increased by personal hygiene practices, such as vaginal douching, that disrupt the normal vaginal flora. Bacterial vaginosis may also be associated with concurrent STIs, commonly *Trichomonas vaginalis*. Bacterial vaginosis is associated with pelvic infection after induced abortion and in pregnancy with pre-term delivery and low birthweight babies. Trichomoniasis is less common in affluent countries but reaches high levels (often 10-20%) among poor women in developing countries as well as among disadvantaged women in affluent countries. Although vulvovaginal candidiasis and bacterial vaginosis often develop independently of sexual activity, trichomoniasis is mainly sexually transmitted and has been ranked by the World Health Organization as the most prevalent non-viral STI in the world, with an estimated 172 million new cases a year.

### Principles of management

As mentioned above, self reported symptoms and the clinical appearance of vaginal discharge are both very variable and do not permit accurate determination of the presence or absence of a specific STI. A full screen to exclude STIs is essential to avoid delayed diagnosis and possible long term complications.

This article is adapted from the fifth edition of the *ABC of Sexually Transmitted Infections*, which is published by BMJ Books ([www.bmjbooks.com](http://www.bmjbooks.com)). An overview of genital candidiasis, bacterial vaginosis, and trichomoniasis is available on [bmj.com](http://bmj.com)

#### What can influence physiological discharge?

##### Age

- Prepubertal
- Reproductive
- Post-menopausal

##### Hormones

- Hormonal contraception
- Cyclical hormonal changes
- Pregnancy

##### Local factors

- Menstruation
- Post partum
- Malignancy
- Semen
- Personal habits and hygiene

#### Pathological vaginal discharge

##### Infective discharge

###### Common causes

###### Organisms:

*Candida albicans*  
*Trichomonas vaginalis*  
*Chlamydia trachomatis*  
*Neisseria gonorrhoeae*

###### Conditions:

Bacterial vaginosis  
 Acute pelvic inflammatory disease  
 Postoperative pelvic infection  
 Post-abortion sepsis  
 Puerperal sepsis

###### Less common causes

Human papillomavirus  
 Primary syphilis  
*Mycoplasma genitalium*  
*Ureaplasma urealyticum*  
*Escherichia coli*

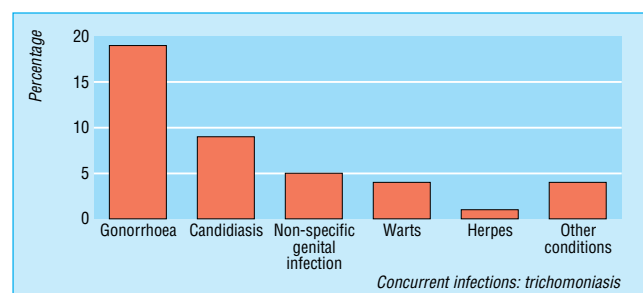
##### Other reasons for discharge

###### Common causes

Retained tampon or condom  
 Chemical irritation  
 Allergic responses  
 Ectropion  
 Endocervical polyp  
 Intrauterine device  
 Atrophic changes

###### Less common causes

Physical trauma  
 Vault granulation tissue  
 Vesicovaginal fistula  
 Rectovaginal fistula  
 Neoplasia



Concurrent STIs found in a survey of women with *T vaginalis*

A woman's STI risk can be assessed by taking a sexual history. Primary care practitioners can then decide whether it is appropriate to refer a woman with identified risk factors directly to a genitourinary medicine clinic for further management.

The advantage of managing vaginal discharge in a genitourinary medicine clinic is that full microbiological tests are done to establish an accurate diagnosis. Microscopy is also carried out routinely for symptomatic cases, so an immediate diagnosis will be available for many women.

The presence of lower abdominal pain, cervical excitation pain, and adnexal tenderness in association with abnormal vaginal discharge implies pelvic inflammatory disease.

## Syndromic management

Syndromic management is based on the patient's symptoms and can be undertaken without laboratory support. A flow chart is used to guide the healthcare provider to the most appropriate treatment for a given set of symptoms and signs in a woman with a specifically defined risk history. Ideally, these flow charts are based on the local prevalence of STIs, their associated risk factors, and antibiotic sensitivities.

### Investigations

When laboratory facilities are available, a woman with abnormal vaginal discharge should be investigated for gonorrhoea, chlamydia, trichomoniasis, bacterial vaginosis, and candidiasis with samples taken from the vagina and endocervix.

## Treatment

Women with vulvitis caused by vulvovaginal candidiasis may respond best to a combination of intravaginal and topical vulval therapy. It should be noted that miconazole and econazole have an adverse effect on latex condoms, which could cause condom failure. Oral metronidazole, which is used for treating both bacterial vaginosis and *T. vaginalis*, is associated with a metallic bad taste in the mouth, gastrointestinal disturbance, and a disulfiram reaction with alcohol. Patients should be advised to avoid alcohol during and for 48 hours after treatment. In the past, questions have been raised about the safety of metronidazole in pregnancy, especially during the first trimester. The current British treatment guidelines advise that no toxicity in pregnant humans has been established. Treatment of symptomatic patients during pregnancy may produce more benefit than harm, and low dose treatment can be used in the first trimester, where clinical indications are present.

## Management

Many women self diagnose and self treat episodes of vaginal infection with over the counter treatments and may subsequently present with a history of "recurrent thrush," never having had this diagnosis confirmed by microbiological tests.

It is important to confirm the diagnosis and to ensure a full sexual health screen has been done to exclude concurrent infection. Management of vaginal discharge requires an empathic approach with reassurance and psychological support as necessary.

## Recurrent vulvovaginal candidiasis

Recurrent vulvovaginal candidiasis is defined as four or more episodes of symptomatic infection annually, which occurs in 5% of healthy women. *Candida glabrata* and other non-albicans

### Questions to ask women who complain of vaginal discharge

#### Discharge

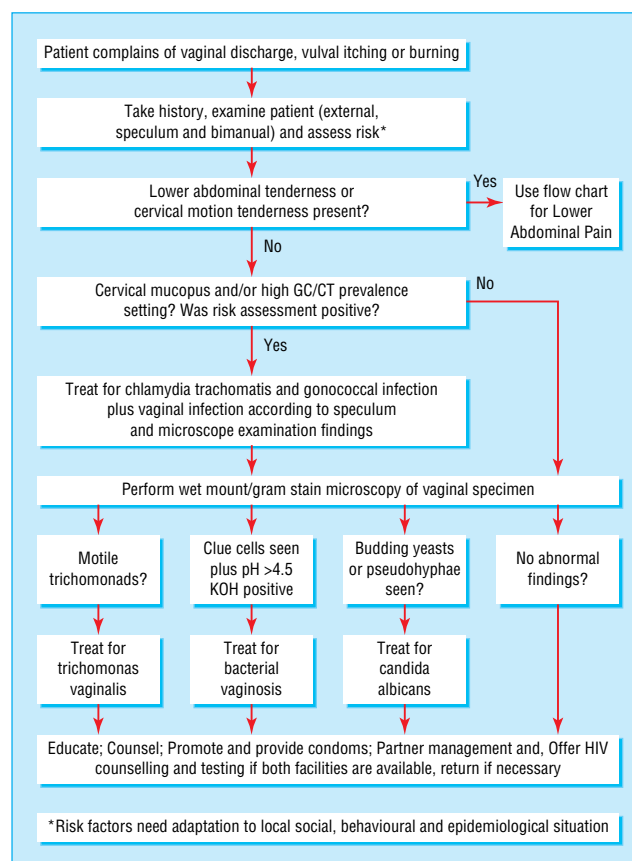
- Onset
- Duration
- Amount
- Colour
- Blood staining
- Consistency
- Odour
- Previous episodes

#### Associated symptoms

- Itching
- Soreness
- Dysuria
- Intermenstrual or post-coital bleeding
- Lower abdominal pain
- Pelvic pain
- Dyspareunia—superficial and deep

### Risk factors for presence of STIs

- Age under 25 years
- No condom use
- Change of sexual partner in past 3 months
- Frequent change of sexual partner or multiple contacts
- Symptoms in partner—for example dysuria
- Previous sexually transmitted infection
- Symptoms imply complications of sexually transmitted infection
- Partner's sexual risk behaviour



Flow chart for management of vaginal discharge (bimanual, speculum, and microscope) adapted from World Health Organization guidelines ([www.who.int/docstore/hiv/STIManagementguidelines](http://www.who.int/docstore/hiv/STIManagementguidelines)). GC/CT=gonorrhoeal/chlamydial infection

species are found in 10-20% of cases. It is important to consider the following:

- Medical conditions, such as diabetes mellitus, frequent antibiotic use, and long term steroid treatment
- Vulvar symptoms may be caused by an underlying genital dermatological condition, such as dermatitis or lichen sclerosus
- Immunosuppression—for example, HIV infection
- *Candida* species sensitivities if there is an azole resistant isolate. Intravaginal nystatin or boric acid pessaries are alternative treatments
- An association between atopy, particularly allergic rhinitis, and increased severity of symptoms in recurrent vulvovaginal candidiasis has been described.

## Recurrent bacterial vaginosis

Women may report psychosexual symptoms with lack of libido and anxiety about infection as a consequence of recurrent episodes of bacterial vaginosis and associated malodour.

The bacteria responsible do not persist in the male partner, and concurrent treatment of the male partner does not affect the rate of relapse.

Condom use with male sexual partners may help reduce the risk of recurrence of bacterial vaginosis. Use of hormonal contraception does not increase the incidence of bacterial vaginosis. Women with an intrauterine contraceptive device or system in situ have an increased risk of bacterial vaginosis. Women who use the diaphragm and who have *Escherichia coli* urinary tract infections also have an increased incidence of concurrent bacterial vaginosis.

Once again, no robust evidence supports the various alternative treatments available. However, some evidence exists to support the use of intravaginal acetic acid preparations in managing recurrent bacterial vaginosis.

## Persistent vaginal discharge

It can be difficult to know what to do for women who complain of persistent vaginal discharge with repeated negative STI screen results and negative cervical cytology. When minimal discharge is evident on examination, it is worth discussing again personal hygiene practices and douching, the basis for physiological discharge, and inquiring whether there are psychosexual difficulties as a result of the patient's continued symptoms.

If use of spermicides and lubricants is contributing to symptoms, alternative contraception choices should be discussed. An extensive cervical ectropion can cause heavy mucoid discharge, which, if troublesome to a woman with normal cervical smear test results, may be helped by intravaginal acetic acid. Some cases may warrant cryocautery to relieve symptoms.

After the menopause, atrophic vaginal changes may predispose women to infective vaginitis. Intravaginal oestrogen replacement, with pessaries or cream, gradually improves the condition of the vaginal epithelium and reduces the susceptibility to infection.

Underlying gynaecological disease must be considered in all women with unexplained persistent vaginal discharge. Gynaecological neoplasms, such as benign endocervical and endometrial polyps, can present with vaginal discharge, and malignancy needs to be excluded.

Referral to a gynaecologist allows for further investigations that may include transvaginal ultrasonography, endometrial sampling, and hysteroscopy.

### What can we offer women with recurrent vulvovaginal candidiasis?

- Longer courses of treatment or empirical self treatment with an intravaginal azole at identified cyclical trigger points over three months
- Maintenance treatment regimens:  
Fluconazole 100 mg weekly for six months  
Clotrimazole 500 mg pessary weekly for six months
- Non-albicans species may respond to intravaginal nystatin pessaries for 14 days
- Modifying the allergic component of the problem:  
Hydrocortisone ointment 1% topically  
A mildly sedating antihistamine at bedtime may relieve nocturnal irritation and scratching (chlorpheniramine 4 mg orally)

### What can we offer women with recurrent bacterial vaginosis?

- Give a clear explanation about bacterial vaginosis
- Carefully go through their daily personal hygiene practices to identify those that may disrupt the normal balance of vaginal flora
- Explain that although short course treatments often relieve symptoms, the imbalance in bacteria may persist, and this is why symptoms can recur after treatment
- A longer course of antibiotics such as metronidazole (400 mg) twice daily for up to seven days can be more effective in preventing or delaying recurrence
- Additional use of acetic acid preparations may also be beneficial
- Explore the impact on the patient's personal and sexual life and offer psychological support and psychosexual counselling when appropriate
- If a woman with recurrent bacterial vaginosis has an intrauterine device in situ, alternative contraception could be discussed

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